



ANTIMICROBIAL RESISTANCE

WHAT IS THE PUBLIC HEALTH PROBLEM?

- In the United States and around the world, many important human infections are developing resistance to the antimicrobial drugs used to treat them. Up to 35% of *Streptococcus pneumoniae* found in some areas of the U.S. are no longer susceptible to penicillin and multidrug resistance is common. Approximately 16% of *S. pneumoniae* are now resistant to "third generation" cephalosporin antimicrobials, and resistance to the newest fluoroquinolone antimicrobials has also emerged. In the 1970s, virtually all *S. pneumoniae* were susceptible to preferred drugs.
- Nearly all strains of *Staphylococcus aureus* in the U.S. are resistant to penicillin and over 50% of *S. aureus* infections acquired in U.S. intensive care units are now resistant to the preferred methicillin class drugs and usually have multidrug resistance. In 2002, two cases of *S. aureus* resistant to the drug vancomycin, for many years the only uniformly effective treatment, were reported. Drug-resistant *Staphylococcus aureus*, formerly seen almost exclusively in hospitals, is now being reported in the community.

WHAT HAS CDC ACCOMPLISHED?

- **Surveillance and Response:** CDC, in collaboration with state and local health departments, monitors and tracks drug-resistant infections. For example, pneumococcal infections are tracked in ten geographic areas with a combined population of 20 million; healthcare-acquired infections in 300 hospitals in 15 states; and enteric infections in 50 states (in collaboration with the Food and Drug Administration (FDA) and the U.S. Department of Agriculture). CDC also monitors drug-prescribing practices.
- **Applied Research:** CDC provides grants to academic institutions for applied research in antimicrobial resistance; develops laboratory tests to detect drug resistance in bacteria, viruses, and parasites; studies the molecular basis of resistance and the ways resistance develops and spreads; and evaluates interventions, such as improved prescribing practices, infection control practices, and use of vaccines.
- **Infrastructure/Training:** CDC improves the capacity of health departments, healthcare delivery organizations, and clinical laboratories to detect and report resistant infections and to implement prevention and control strategies.
- **Prevention and Control:** CDC translates research findings into community-based and healthcare-based prevention programs and develops programs to promote appropriate antimicrobial use, infection control, vaccine use, and detection of drug-resistant infections by clinicians and laboratories. Two campaigns are underway to promote appropriate use of antimicrobial drugs in the community and to prevent antimicrobial resistance in healthcare settings.

WHAT ARE THE NEXT STEPS?

In 1999, an interagency task force was formed, co-chaired by CDC, FDA, and the NIH, to better coordinate public health efforts to address antimicrobial resistance. In 2001, *A Public Health Action Plan to Combat Antimicrobial Resistance* was released. From 2001 through 2003, the agencies have been implementing the Action Plan as resources allow. Priority actions for CDC include: (1) improving monitoring of drug resistance and use, (2) improving drug prescribing by educating the public and clinicians, and (3) improving infection control practices.

For more information on this and other CDC programs, visit www.cdc.gov/programs.

February 2003